

REMARKS

The Office Action dated February 28, 2006, and the patents cited therein have been carefully reviewed, and in view of the above changes and following remarks reconsideration and allowance of all the claims pending in the application are respectfully requested.

The Amendment To The Claims

Applicants have amended claims 1, 16 and 30 to improve their respective forms in accordance with U.S. patent law. In particular, Applicants have amended claims 1, 16 and 30 so that each now specifically set forth that n and c are integer value numbers. Applicants further respectfully submit that one of skill in the art would understand that “c and n” are both integer value numbers.

The Objection To The Claims

Claims 1, 16 and 30 stand objected to because the phrase “n data information sectors with c redundancy information sectors” has been indicated as vague and indefinite, and appropriate correction is required.

Applicants respectfully submit that the phrase “n data information sectors with c redundancy information sectors” has the possibility of being vague and indefinite when the phrase at issue taken by itself, that is, when the phrase at issue is taken out of context of the rest of the limitation with which the phrase at issue is connected. Applicants respectfully submit that the limitation “associating n data information sectors with c redundancy information sectors” is not vague and indefinite.

Consequently, Applicants respectfully request the Examiner to withdraw this objection.

The Objection To The Specification

The specification stands objected to because in paragraphs 12, 13 and 20 of the specification, the phrases “c redundancy information sectors” and “n data information sectors”

are indicated as not being clearly defined. Additionally, “c and n” values are indicated as needing to be clearly defined. Appropriate correction is required.

Applicants respectfully submit that “c and n” are clearly defined in the specification. Further, Applicants respectfully submit that one of skill in the art would understand that “c and n” are both integer value numbers. Even further, Applicants respectfully submit that “c” and “n” are related (1) by c code sectors being associated with n data sectors, and (2) as the c code sectors being an erasure code (i.e., as redundancy information) based on the n data sectors such that the c code sectors protect against up to c sectors of uncorrectable media errors in the n data sectors. (See specification, paragraphs 20 and 25.) When a general erasure code, such as a Reed-Solomon erasure code, is used, any combination of n and c can be chosen. (See specification, paragraph 25.)

Consequently, Applicants respectfully request the Examiner to withdraw this objection.

The Rejection Under 35 U.S.C. § 102(b) Over Kaneda

Claims 1, 3, 8, 9, 13-15, 18, 23, 24, 28, 29, 32, 37, 38, 42 and 43 stand rejected under 35 U.S.C. § 102(b) as anticipated by Kaneda et al. (Kaneda), U.S. Patent No. 5,958,067.

Applicants note that while the Examiner has indicated that claims 1, 3, 8, 9, 13-15, 18, 23, 24, 28, 29, 32, 37, 38, 42 and 43 have been rejected as anticipated by Kaneda, the Examiner has also provided comments relating to the rejection of claims 16 and 30 as anticipated by Kaneda. Consequently, Applicants response to this rejection will include comments relating to claims 16 and 30.

Applicants have amended claims 1, 16 and 30 to improve their respective forms in accordance with U.S. patent law. In particular, Applicants have amended claims 1, 16 and 30, as described elsewhere in this response, so that each now specifically set forth that n and c are integer values numbers.

Applicants respectfully submit that the present invention according to any of claims 1, 3, 8, 9, 13-16, 18, 23, 24, 28-30 32, 37, 38, 42 and 43 is patentable over Kaneda. Specifically regarding claim 1, Kaneda does not disclose or suggest a method for protecting data stored in a

RAID-configured storage system from uncorrectable media errors that includes writing the claimed n data information sectors with the claimed c redundancy information sectors on the same storage unit. Instead, Kaneda discloses a method that associates data information blocks with redundancy information blocks (parity) and writes the data information blocks and the associated redundancy information blocks (corresponding parity) on different storage units. For example, Figure 1 of Kaneda shows a parity information block (P0-3) corresponding to data information blocks 0-3 written to a storage unit that is different from the storage units storing data information blocks 0-3. In that regard, Figure 1 of Kaneda shows that all of the Kaneda parity information blocks are written to storage units that are different from the storage units storing the corresponding data information blocks. A similar scheme is also shown in Kaneda Figure 10C. Moreover, Kaneda does not suggest that the parity information blocks can be written to the same storage unit in which the corresponding data information blocks are written because the technique disclosed by Kaneda is not for protecting data stored in a RAID-configured storage system from uncorrectable media errors.

Thus, claim 1 is allowable over Kaneda. It follows that claims 3, 8, 9 and 13-15, which each incorporate the limitations of claim 1, are each allowable over Kaneda for at least the same reasons that claim 1 is considered allowable.

Regarding claim 16, Applicants respectfully submit that claim 16 is allowable over Kaneda for reasons that are similar to the reasons that claim 1 is considered allowable. In particular, Applicants respectfully submit that Kaneda does not disclose or suggest a storage medium having a recording format therein, such that the format comprises c redundancy information sectors that are associated with n data information sectors to form a segment, the c redundancy information sectors being based on the n data information sectors, n and c being integer value numbers, and such that the segment is stored on a single storage medium that is part of a single storage unit in an array of storage units in a RAID-configured storage system.

Thus, claim 16 is allowable over Kaneda. It follows that claims 18, 23, 24, 28 and 29, which each incorporate the limitations of claim 16, are each allowable over Kaneda for at least the same reasons that claim 16 is considered allowable.

Regarding claim 30, Applicants respectfully submit that claim 30 is allowable over Kaneda for reasons that are similar to the reasons that claim 1 is considered allowable. More specifically, Applicants respectfully submit that Kaneda does not disclose or suggest a storage system comprising a plurality of storage units coupled to an array controller, such that the storage units are configured in a RAID configuration, and at least one data segment being stored on at least one storage unit including n data information sectors and c redundancy information sectors, such that the c redundancy information sectors are based on the n data information sectors, and n and c being integer value numbers.

Thus, claim 30 is allowable over Kaneda. It follows that claims 32, 37, 38, 42 and 43, which each incorporate the limitations of claim 30, are each allowable over Kaneda for at least the same reasons that claim 30 is considered allowable.

Consequently, Applicants respectfully request that the Examiner withdraw this rejection and allow claims 1, 3, 8, 9, 13-16, 18, 23, 24, 28-30 32, 37, 38, 42 and 43.

The Rejection Under 35 U.S.C. § 103(a) Over Kaneda In View of Hetzler

Claims 2, 4-7, 10-12, 17, 19-22, 25-27, 31, 33-36 and 39-41 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Kaneda, in view of Hetzler et al. (Hetzler), U.S. Patent Application 2005/0015700 A1.

Applicants respectfully submit that the present invention according to any of claims 2, 4-7, 10-12, 17, 19-22, 25-27, 31, 33-36 and 39-41 is patentable over Kaneda in view of Hetzler. In particular, Applicants respectfully submit that Hetzler does not cure the deficiencies of Kaneda with respect to claims 1, 16 and 30, the base claims of claims 2, 4-7, 10-12, 17, 19-22, 25-27, 31, 33-36 and 39-41.

More specifically regarding base claim 1, Applicants respectfully submit that Hetzler does not disclose or suggest a method for protecting data stored in a RAID-configured storage system from uncorrectable media errors that includes writing the claimed n data information sectors with the claimed c redundancy information sectors on the same storage unit.

Regarding base claim 16, Hetzler does not disclose or suggest a storage medium having a recording format therein, such that the format comprises c redundancy information sectors that are associated with n data information sectors to form a segment, the c redundancy information sectors being based on the n data information sectors, n and c being integer value numbers, and such that the segment is stored on a single storage medium that is part of a single storage unit in an array of storage units in a RAID-configured storage system.

Regarding claim 30, Hetzler does not disclose or suggest a storage system comprising a plurality of storage units coupled to an array controller, such that the storage units are configured in a RAID configuration, and at least one data segment being stored on at least one storage unit including n data information sectors and c redundancy information sectors, such that the c redundancy information sectors are based on the n data information sectors, and n and c being integer value numbers.

Consequently, Applicants respectfully request that the Examiner withdraw this rejection and allow claims 2, 4-7, 10-12, 17, 19-22, 25-27, 31, 33-36 and 39-41.

CONCLUSION

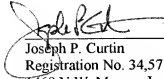
In view of the above amendments and arguments, it is urged that the present application is now in condition for allowance. Should the Examiner find that a telephonic or personal interview would expedite passage to issue of the present application, the Examiner is encouraged to contact the undersigned attorney at the telephone number indicated below.

A general authorization under 37 C.F.R. § 1.25(b), second sentence, is hereby given to credit or debit Deposit Account No. 09-0441 for the instant filing and for any other fees during the pendency of this application under 37 C.F.R. §§ 1.16, 1.17 and 1.18.

It is requested that this application be passed to issue with claims 1-43.

Respectfully submitted,

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